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ABSTRACT

Pansophism, invented by the philosopher John Amos Comenius in the mid-1600s, is a system of education for all people to be made knowledgeable about the world, able to judge its events for themselves, and able otherwise to generate and sustain the conditions of progress. In developing this system of education, Comenius combined his first treatises on pansophism with his matching demonstrations of it in the form of an illustrated textbook. Titled "The Great Didactic," the textbook was suited both for the classroom and for independent learning. Comenius next published "Orbis Sensualim Pictus" (The World in Sensible Pictures), a book that taught conversation by describing concrete things and used an illustrated alphabet which paired letters with the image of a creature or natural phenomenon that could be heard to make a similar sound. Pansophism forms the foundation for audiovisual aids, educational radio and television, and the use of computerized instruction and tests in schools. Further, it sets the standards for literacy, including computer literacy, and for the use of testing that allows the student to supply information and revise his performance as the experience increases his knowledge or sharpens his skills. Any software for education might be expected to show the three qualities idealized by Comenius in the "Great Didactic" and achieved in "Orbis Sensualim Pictus"--it should be quick, pleasant, and thorough. (3 references) (DB)

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THE PANSOPHISM OF JOHN AMOS COMENIUS (1592-1670) AS THE FOUNDATION OF EDUCATIONAL TECHNOLOGY AND THE SOURCE OF CONSTRUCTIVE STANDARDS FOR THE EVALUATION OF COMPUTERIZED INSTRUCTION AND TESTS

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This paper is meant to recommend to you the resilient philosophy of education by which we all would have learned to notice what the sheep says.

The marriage of education with technology is nearly as old in fact as mankind itself, for it would have begun when the first mother or father decided to demonstrate with the object itself--or an image of the object itself--in introducing a child to an implement of survival. In the written record, however, the combination began with the Reformation philosopher John Amos Comenius. He devoted himself to explaining how and why the object lesson works and to advocating its systematic use as the best policy for education, the best service of technology, and the best hope, in any case, for mankind's success.

As the last indigenous bishop of the Moravian Brethren, Comenius was a conspicuous victim of the Counter Reformation and its Thirty Years' War. He believed his people's persecution to be due to miseducation--their own

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and their fellow beings'--so he tried to invent a method and scheme of education that would make it impossible for such senselessness to recur in any other place or time.

His invention, of course, was "pansophism." This system of education is meant to provide for all people to be made knowledgeable about the world, able to judge its events for themselves, and able otherwise to generate and sustain the conditions of progress. Pansophism is meant, in fact, to "cause a universal Peace and Concord to pour forth upon all mankind" (Comenius, 1651, pp. 50-51); and that objective could not have been more explicit. "If our proposals for universal education do not tend towards this end," Comenius (1957) said, "we are wasting our time, deceiving God and ourselves and contributing nothing to the reform" (p. 135).

And what was his focus for the reform? The mass-produced curriculum--which meant, in his day, the printed textbook.

Before 1657, the average textbook in the West was a Latin book, and it was not just unillustrated; it also was unillustratable. It was so mired in abstractions as to be spare of images, and its typical image was likely to be an illogical one. It taught more prejudices, therefore, than facts; and it thus deprived its users of the information they needed in order to improve their daily lives. The typical text on language, further, was

mainly a text on grammar. Any connections that it might have made between words and things were coincidental.

1657 marked the publication at Amsterdam, however, of the Opera Didactica Omnia--the great folio that combined Comenius' treatises on pansophism with his matching demonstrations of it. The collection opened with his Didactica Magna or The Great Didactic; and this treatise committed education to the patterns of Nature, the procedures of science, the contemporary knowledge of man's physical and mental nature, and the Renaissance view of the disciplines as matters that are harmonious and interrelated. It advocated universal public education in universal knowledge as it might have been provided by a graded, universal series of "didacographic" schoolbooks (Comenius, 1910, pp. 289, 293).

These were textbooks that approached every matter with a lesson on its most sensible objects. They easily were accountable, therefore, to student and teacher alike. Perfectly suited for the classroom, they were equally useful for independent learning. While making it routine for a teacher to be effective, they also would make it easy for each pupil to teach himself. Indeed, the new books were to provide, as the Didactic said, for every lesson to be learned "quickly, pleasantly, and thoroughly."

As his best demonstration, Comenius next published--in 1658, at Nuremberg--his Orbis Sensualium Pictus (A World of Things Obvious to the Senses Drawn in Pictures--or The World in Sensible Pictures). This "class-book" offered over 150 illustrations of a fairly technical sort. It taught conversation in the vernaculars and Latin at once by just describing concrete things--the features and creatures of the physical world, the human anatomy, the common occupations, etc. Further, it offered this information in chapters that were short and notably disciplined otherwise. Its hallmark was an illustrated alphabet that paired each letter with the image of a creature or a natural phenomenon that could be heard to make a similar sound.

[PROJECTOR]

The high achievements of pansophism are seen, then, when an alphabet page of Orbis Pictus (Figure 1 here) is compared with such a page from the revisionary primers that followed. A prime example of the latter was The Guide for the Child and Youth, published at London in 1726, which is Figure 2 here. The visual clutter of the Guide's alphabet page, along with its use of verse instead of prose, accurately indicates the retreats that it made from sensibleness overall. While, in Orbis Pictus, for instance, A was said to stand for the crow's cry (Ah-Ah), in the Guide, A

Figure 1
Orbis Pictus
(portion of page)

Cornix cornicatur, à à | A a
The *Crow* crieth.

Agnus balat, b è è è | B b
The *Lamb* blaiteth.

Cicàda stridet, cì cì | C c
The *Grasshopper* chirpeth.

Upupa dicit, du du | D d
The *Whooppoo* saith.

Infans ejulat, è è è | E e
The *Infant* crieth.

Ventus flat, fi fi | F f
The *Wind* bloweth.

Anser gingrit, ga ga | G g
The *Goose* gagleth.

Os halat, hà'h hà'h | H h
The *Mouth* breatheth out.

Mus mintrit, ì ì ì | I i
The *Mouse* chirpeth.

Figure 2

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is shown with a picture of Eden and the verse "In Adam's Fall . . . We sinned all." And while, in Orbis Pictus, C was said to stand for the grasshopper's chirping (ci-ci), in the Guide, C is represented by a cat who is standing upright playing a violin for an audience of mice. ("The cat does play," the - words - there - say, "And after slay.") By the letter J, the Guide's verbal fare had become ungrammatical. "Jesus did dye," it said there, "For thee and I."

No better, perhaps, were some of the later revisions to be issued of Orbis Pictus itself. Several of these, for reasons practical and otherwise, either removed or altered some of the pictures; and at least two of the revisions--those published at Leipzig in 1784 and at Caracas in 1840--removed all of the drawings.

Still, the pansophical model had been seen, and it was never to be forgotten for long. The effectiveness of Comenius' golden rule would be verified by the parade of theorists to follow, so Comenius is called the "Father of Modern Education." Indeed, his pansophism and its didacography are viewed as the foundation of audiovisual aids, educational radio and television, and the use of computerized instruction and tests in the schools.

Any software for education might be evaluated, then, by the standards of pansophism. We might expect every such program to show the three qualities that the Great Didactic idealized and Orbis Pictus amply achieved. For each user of each level, barring none, the offered software should be quick, it should be pleasant, and it should be thorough.

In order to work "quickly" while also being brief, a program must regard the golden rule, depicting its points with sensible evidence. Having, in the first place, a subject that furthers human harmony, it should combine those things that naturally are associated. It should go from the simple to the complex and use similar procedures for similar ideas. It meanwhile should avoid waste. It should design every operation to produce multiple results; and it should eliminate every possible distraction from or obstruction to its theme.

In order to work "pleasantly" while serving users of diverse backgrounds and dispositions, the computerized course or test must avoid tedium, memory overload, and everything else that might make it offensive to this or that scholar. Nearly always, it should use, moreover, the conversational mode, offering good questions and many chances for discussion. It also might employ certain other Comenius favorites, such as dialogues and simulations in which the good performance is cheered.

And in order to work "thoroughly" while also being fast and pleasant, the program must reinforce the visual experience with verbal experience continually. It must alternate its reading activities with writing activities, and must provide for the writing to be considered, evaluated, and refined. It also should provide for the student to sample, at least, the teacher's role; and it finally should induce the student to create, in fact, a new course or test himself.

These standards show how central reading and writing are to literacy of any sort, including "computer literacy"; and they make us demand more than we generally do of the verbal experience that our software offers. They help us to value the critical similarities of interactive systems such as Realtime Writer and Daedalus, for instance, and they encourage us to retain in our tests the style of problem that allows the student to supply material. They meanwhile make us skeptical about instruments such as our College Board's Computerized Placement Test, which leave the student without any record of the problems that he was given and do not allow him to revise his performance as the experience increases his knowledge or sharpens his skills.

The courseware that is true to its pansophic roots will do better than decorate the status quo: it will call the status quo into question. It will show its author to understand, in fact, the Comenius declaration that "If the scene of the world is to be changed, all man's education must be changed." Such program will present its truths so usefully as to merit --and win--an ever-widening audience. It thereby will increase humanity's concord and will improve humanity's prospects.

This being the decade in which, in 1992, the Quadricentennial of Comenius' birth will be marked on perhaps every continent, we who sit in this conference could set mankind onto the road that Comenius has paved for it. Seeing our world to have, like his, great suffering on the one hand and new stirrings toward freedom and progress on the other, we might rededicate our activities to the objectives and practices of pansophism. These would make the suffering unacceptable and give the bold stirrings what they urgently need: [SHOW DISKETTE] a reformer of universal scope.

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